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WORD

U. S. DEPART..

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**GRADING
AND
EXPORTING
WHEAT
IN THE
UNION OF
SOVIET
SOCIALIST
REPUBLICS**

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inside

FOREWORD

An agreement was concluded on December 1, 1959, between the Governments of the United States of America and the Union of Soviet Socialist Republics providing for exchanges in the cultural, technical, and educational fields. This is the second such agreement; the first was concluded in 1958.

Agriculture, which plays an important role in the national economies of the two countries, was specifically included in the agreements as a field for exchange of specialists. The U.S. Department of Agriculture accordingly sent to the Soviet Union in 1960 four technical study groups of specialists in the following subjects: Handling, storage and transportation of grain; food processing; agricultural information and planning; and soil salinity. In 1961 it is planned to send two additional study groups in the following fields: Poultry-husbandry; and forage crops and range management.

The Soviet Union in turn sent to the United States in 1960 three delegations of specialists in the following subjects: Food processing; fertilizers, insecticides and weed killers; and agricultural science and information. In 1961 three additional Soviet teams are expected in the following fields: Poultry-husbandry; breeding and hybridization of cattle and pigs; and mechanization of cultivation and harvesting of sugar beet and potatoes.

Each United States exchange study group, on completion of its assignment, prepared a report for publication. The grain exchange group composed of V. John Brensike, Chairman; Leo E. Holman, Lawrence Zeleny, Agricultural Marketing Service; John C. Cowan, Assistant to the President, Danner Mills, St. Joseph, Missouri; Roy K. Durham, Technical Consultant to the Flour Milling Industry, San Francisco, California; Eugene T. Olson and Raymond E. Vickery, Foreign Agricultural Service, has prepared two reports. The first, Grading and Exporting Wheat in the Union of Soviet Socialist Republics, was prepared by Raymond E. Vickery, Foreign Agricultural Service, and Lawrence Zeleny, Agricultural Marketing Service, with the assistance of the other members of the delegation. The second, Grain Marketing in the Soviet Union, With Emphasis on Wheat, was prepared by V. John Brensike assisted by the other members of the delegation. 3a ←

Reports on the 1958 exchanges have been published under the following titles: Soil and Water Use in the Soviet Union, Economic Aspects of Soviet Agriculture, Cotton in the Soviet Union, Veterinary Science in the Soviet Union, Crop Research in the Soviet Union, Farm Mechanization in the Soviet Union. The 1959 reports in processing stage are Entomology in the Soviet Union, Livestock in the Soviet Union, and Forestry and Forest Industry in the U.S.S.R.

Gustave Burmeister
Assistant Administrator
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GRADING AND EXPORTING WHEAT IN THE UNION OF SOVIET SOCIALIST REPUBLICS

Wheat production and marketing in the Soviet Union, like all other aspects of the country's economy, are government directed. The state owns all the means of production, including land and equipment. The management and workers are subjects of the state, and are directed by the central authority to achieve predetermined goals.

Organization and Planning

The Minister of Agriculture has responsibility for production of wheat on the collective and state farms, where all wheat is grown. The State Committee for Grain Products has responsibility for collecting the grain from the farms, storing, and distributing it to the state-owned flour mills, processing it into flour, distributing the flour to the bakeries, and delivering wheat aboard ships for export. The Committee carries this out through the Ministries of Grain Products in the 15 Republics of the Union. These Ministries, in turn, direct the activities of the Oblast or Krae (roughly equal to a county) Directorates of Grain Products. The Soviet economy is now working on a 7-year plan to end in 1965. The team was told that a 20-year plan is now being prepared which will start at that time.

The export plans for wheat are made in the Ministry of Foreign Trade, and are implemented by the Export Khleb, or Export Grain Corporation. This organization also handles the import as well as export of all grains, including rice, oilseeds, and related products.

At the top level, the planning for production, domestic utilization, and export of wheat is coordinated by the State Planning Committee (GOSPLAN) with the Council of Ministries of the USSR. The Committee is responsible for the comprehensive studies of the national economy's requirements, including those for foreign trade, and for working out current and long-range plans and their implementation.

Wheat Production 1/

The USSR has been the world's largest producer of wheat since 1948, though its production fluctuates widely from one year to the next. Both acreage and production have increased sharply since World War II -- acreage about 50 percent and production, about 75 percent. The expansion in acreage has been mainly in the New Lands. The yield per acre, which is influenced by weather conditions, has caused total production to vary widely.

1/ Where available, USSR published figures and those supplied by officials will be used throughout the report. Even though production figures in particular may differ in absolute terms from USDA estimates, it is believed best to use USSR figures for comparative purposes in this report.

Acreage, Yield, and Production

Wheat acreage increased sharply from 81.6 million acres in 1913 to 170.6 million acres in 1957, then declined to 155.7 in 1959. Yields per acre have fluctuated widely but have increased from about 12 bushels in 1913 to over 16 bushels in 1959. Total production has also trended upward, from 968 million bushels in 1913 to 2,813 million in 1958. Production in 1959 was estimated to be down to 2,539 million bushels.

Table 1.--Wheat: Acreage, yield per acre, and production in the USSR, 1913, 1940, 1950, and 1953-59

Year of harvest	Area	Yield per acre <u>1/</u>	Production <u>1/</u>
	1,000 acres	Bushels	Million bushels : Million metric tons
1913	81,602	11.9	968 : 26.3
1940	99,490	11.7	1,167 : 31.8
1950	95,202	12.0	1,142 : 31.1
1953	119,488	12.7	1,516 : 41.3
1954	121,924	12.8	1,558 : 42.4
1955	149,389	11.6	1,738 : 47.3
1956	153,227	16.2	2,476 : 67.4
1957	170,642	12.5	2,135 : 58.1
1958	164,673	17.1	2,813 : 76.6
1959	155,665	16.3	2,539 : 69.1

1/ Official Soviet statistics.

Planned Production

The present 7-year plan for developing the economy of the USSR, which started with the 1959 crop, calls for the production of between 76 million and 84 million metric tons of wheat by 1965. If the Soviets should succeed only in reaching the lower range of the goal, production would not greatly differ from that achieved in the record production to date of 76.6 million tons in 1958.

If, on the other hand, the top of the goal -- 84 million metric tons -- should be achieved, this result would be about 10 percent more than was produced in 1958. Indications are that most, if not all, of any increased production of wheat in the USSR must come from increased yields.

Wheat Collection

All of the wheat on the state farms and a specified amount from collective farms is procured by the government. The government sets a quota for procurement from each Republic and an overall quota for the country. The Com-

mittee for Grain Products is responsible for each Republic's meeting its quota and for the collections from each of the collective farms.

The official state procurement averages about 50 percent of total production. The range has been from 42 percent in 1955 to 55 percent in 1956 and 1958. A collective may deliver more than its quota if it so desires. Prior to 1958 a premium was paid for deliveries in excess of the quota. Since that time there are no premiums but prices overall are higher. The trend in gross collections have generally been moving upward since 1950, but the amount does fluctuate from year to year depending on the harvest.

Quotas and Prices

Grain-delivery quotas are based on estimates of production and the needs of the state. They may be revised as the season advances to make allowances for weather conditions or for unusual situations. There is a certain amount of flexibility in the prices paid, up to 10 to 15 percent depending on the cost of production, yield, and other factors. For 1960 the basic price in the Kuban region is 60 rubles per centner or 600 rubles (\$150) per metric ton (\$4.08 per bushel) ^{2/}. This applies to "quota" wheat as well as to deliveries above the quota. It is in contrast to the pricing system in effect up to 1958. For example, in the Kiev region the price for "quota" wheat was 20 rubles per centner (\$1.97 per bushel) and 110 rubles per centner (\$7.48 per bushel) for "overquota" deliveries.

Table 2.--Wheat: Official collections as percent of production in the USSR, for specified years

Year of harvest	: Production	: Collections	: Collections as percent of production	: Uncollected
	: Million metric tons	: Million metric tons	: Percent	: Million metric tons
1940	31.8	15.6	49	16.2
1950	31.1	15.1	49	16.0
1953	41.3	19.2	47	22.1
1955	47.3	19.9	42	27.4
1956	67.4	37.2	55	30.2
1957	58.1	25.6	44	32.5
1958	76.6	42.1	55	48.0
1959	69.1	34.2	49	34.9

Official Soviet statistics.

Farm directors seem better satisfied with the present system which provides much more incentive for production.

^{2/} Official commercial exchange rate: 4 rubles = \$U.S. 1., when study was made.

The price paid for wheat varies somewhat by area of production. Also, there is an adjustment for moisture content of the grain. In the New Lands area of Kustanai, 15.5 percent moisture content was used as the basis for the adjustment. In the Kuban region, the grain is drier when it comes to the collecting point; the basis for adjustment price is 14 percent moisture.

Collection and Storage

All wheat acquired by the State Committee for Grain Products for use as food or for export comes in through collection points. They are usually, though not always, situated on railroads. Ordinarily, a collecting point will serve the collective and state farms within a radius of 30 miles. Most of the wheat is delivered directly from the combines on the farms to the collecting points, although some wheat destined for delivery may be stored temporarily on the ground on the farm. One reason for this may be the desire to clean the wheat and keep the "cleanout" on the farm for feed. Wheat saved for seed is nearly always cleaned and stored on the farm.

Storage capacity.--The USSR is conducting an intensive campaign to increase flat and elevator-type storage capacity for grains. The State Grain Projects Institute in Moscow has responsibility for designing and advising on the construction of storage facilities. This Institute has 1,800 employees in Moscow and in the field, planning and supervising construction of storage space and elevators in many parts of the Soviet Union. An example is a new port elevator of 150,000 tons capacity under construction at Odessa. The first two units are scheduled for completion this year. It will have the latest equipment for loading and unloading rail and water cargoes of grain.

The following figures obtained at the Exhibition of Economic Achievement in Moscow indicate the progress in building storage in the Union and certain regional goals for 1965. Total storage capacity in 1940 was 35.7 million metric tons and in 13 years increased by 27 million. From 1953 to 1959 the increase was 18 million. The planned increase by 1965 is 25 million metric tons to a total of 105.3 million.

Table 3.--Grain: Storage capacity in the USSR in specified years

Year	Total	In the Urals	In Kazakstan
	Million metric tons	Million metric tons	Million metric tons
1940	35.7	7.2	1.3
1953	62.5	13.4	2.8
1959	80.1	20.2	9.8
1965 (planned)	105.3	26.5	17.8

Official Soviet statistics.

Grading and Standards

The government has established standards for grain and flour. These standards are designed especially for the domestic market to reflect keeping quality and processing value but are used also for the export market. Wheat sold on the export market, outside Communist areas, is mostly hard wheat of good quality for milling into bread flour either directly or after blending with other wheats.

Development of Grain Standards

The All Union Scientific Research Institute of Grain and Flour Products is responsible for standardization research and for recommending new or revised grain standards. Recommendations go to the State Committee for Grain Products for consideration and from there to the State Standards Committee for final approval and promulgation. The recommendations made by the Institute are usually adopted with little or no change. USSR standards are in effect for wheat, corn, barley, rye, oats, rice, buckwheat, millet, beans, peas, and lentils.

Wheat Standards

Under the USSR wheat standards, there are five types of wheat corresponding roughly with U.S. classes. Most of the types have two or more subtypes corresponding roughly with U.S. subclasses, and each subtype (or type where no subtypes occur) has five classes analogous to U.S. grades.

For the purpose of these standards, the Soviets define wheat as any grain consisting of not less than 85 percent of wheat.

The types, subtypes, and classes are as follows:

Type I. Red Spring. Shall contain not more than 10% of other types but not more than 5% of durum wheat.

Subtype 1. Dark Red Spring Vitreous. Shall be not less than 75% vitreous.

Subtype 2. Red Spring. Shall be not less than 60% or more than 75% vitreous.

Subtype 3. Light Red Spring. Shall be not less than 40% or more than 59% vitreous.

Subtype 4. Yellow-Red Spring. Shall be not less than 40% vitreous.

(This subtype differs from Subtype 3 only in respect to color and in not having a top limit for vitreousness.)

Subtype 5. Yellow Spring. Shall be less than 40% vitreous.

Type II. Durum. Shall contain not more than 10% of other types.

Subtype 1. Dark Amber Durum. Shall have a uniform dark amber color.

Subtype 2. Light Amber Durum. Shall have a uniform light amber color.

(Mixtures of subtypes 1 and 2 are designated "Mixture of Subtypes.")

Type III. White Spring. Shall contain not more than 10% of other types but not more than 5% of durum wheat.

Subtype 1. White Spring Vitreous. Shall be not less than 60% vitreous.

Subtype 2. White Spring. Shall be less than 60% vitreous.

Type IV. Red Winter. Shall contain not more than 10% of other types but not more than 5% of durum wheat.

Subtype 1. Dark Red Winter Vitreous. Shall be not less than 75% vitreous.

Subtype 2. Red Winter. Shall be not less than 60% or more than 74% vitreous.

Subtype 3. Light Red Winter. Shall be not less than 40% or more than 59% vitreous.

Subtype 4. Yellow-Red Winter. Shall be not less than 40% vitreous.

(This subtype differs from Subtype 3 only in respect to color and in not having a top limit for vitreousness.)

Subtype 5. Yellow Winter. Shall be less than 40% vitreous.

Type V. White Winter. (No subtypes)

All subtypes (and in the case of Type V, the type itself) are divided into five classes, the specifications of which are shown in the table on the opposite page.

If wheat is of inferior quality because it is sour, musty, smutty, weevily, ergoty, etc., it does not come under any class, and inspection certificates will state "Wheat does not meet standards because (reason given)."

For export purposes, code numbers are used to designate the type, subtype, and class of wheat. For example, 4-3-1 means wheat of Type IV (Red Winter), Subtype 3 (Light Red Winter), and Class 1.

A revision of the USSR wheat standards is under consideration for adoption in 1961. The revision, if adopted, will provide a standard for "Strong Wheat" intended primarily for export purposes. Provision may also be made for a dockage system in the revised standards.

Class	Minimum limits, test weight	Maximum limits							
		Foreign material 1/				Grain admixtures 2/		Total material	
		Total	Cockle	Other harmful seeds	In spring wheat	In winter wheat	In through 1.7x20mm sieve	Moisture 3/	
		:	:	:	:	:	:	:	:
	: Grams: Kilograms	:	:	:	:	:	:	:	:
	: per liter	: per hectoliter	: Percent	: Percent	: Percent	: Percent	: Percent	: Percent	: Percent
1	: 785 :	78	: 1 :	0.5	: 0.2 :	2	: 3 :	5	: 15.5
2	: 765 :	77	: 2 :	.5	: .2 :	2	: 4 :	5	: 15.5
3	: 745 :	75	: 3 :	.5	: .2 :	4	: 5 :	7	: 15.5
4	: 725 :	73	: 3 :	.5	: .2 :	4	: 6 :	8	: 16.0
5	: 4/ :	4/	: 4 :	.5	: .2 :	6	: 7 :	10	: 16.0

1/ Foreign material includes all material through a 0.5 mm. round-hole sieve; all seeds except wheat, rye, and barley; rotten, moldy, or charred wheat, rye, or barley; pieces of stems, ears, chaff, etc.; and all harmful material.

2/ Grain admixtures include broken or insect-damaged kernels with less than half of kernel left; sprouted kernels; frost-damaged kernels; heat-damaged kernels; distinctly underdeveloped kernels; green kernels; crushed kernels; kernels of rye and barley not included in foreign material. 3/ Wheat for export must never contain more than 14.0 percent moisture. 4/ No minimum.

Official Soviet figures.

Grain Inspection

The USSR has a well-developed and comprehensive system of grain inspection and analysis.

Local Level

Wheat is first "inspected" in the field just prior to harvest on state and collective farms. This is done by agronomists to determine purity of type and variety.

Each truckload of wheat before it leaves the farm is inspected for type only and weighed. A certificate is issued showing the type, weight, and the point of origin. This certificate accompanies the truckload to the elevator.

Central Collection

In each oblast (political subdivision of a Republic) there is at least one local grain inspector or laboratory technician for each elevator or other collection point and one state grain inspector for several elevators or other collection points. The state inspector checks and supervises the work of the local inspector. Each truckload of wheat received from the farm is sampled

and inspected for moisture content and insect infestation. The remaining portions of each truckload sample representing each type of wheat from each farm are composited, and the 24-hour composite sample is then analyzed for all grading factors and the grade established.

Export Market

At export elevators, each car or barge of wheat received from an inland elevator is accompanied by an inspection certificate issued by the inland elevator (State) grain inspector. The grade is checked by an inspector at the export elevator. When any disagreement occurs the grade as determined by the export elevator inspector stands. Such disagreements are said to be rare.

Wheat for export is recleaned at the export elevator to not more than 1 percent foreign material (including dockage) and not more than 2 percent foreign material and "grain admixtures" combined. If necessary the wheat is dried to not more than 14 percent moisture. (Most export wheat is said to contain about 12.5 percent moisture.) The wheat is sampled continuously at the spout during shiploading with a mechanical sampler. (See sampling methods below.) The sample is collected and graded each hour by a state grain inspector. The inspection includes the determination of "klyeikovina" (wet gluten) each hour, although this factor is shown on the export inspection certificate only when requested.

Sampling Methods

At primary elevators where wheat is received from farms in trucks, each truck is sampled. In Krasnodar this was done by a woman using a probe connected to a vacuum line. The probe is inserted at uniform speed to the full depth of the truck near each of the four corners and in the middle. Grain is sucked into the probe by the vacuum from all levels at each of the 5 sampling points and is automatically delivered by means of the vacuum line into a divider in the laboratory where the sample from each truck (about 1 kilogram) is cut down in one operation to 3 portions. One of these portions is used for examination for insect infestation, one for moisture determination, and one for the analysis of the 24-hour composite.

Grain in cars is sometimes sampled with the same type of vacuum probe, but more commonly with a manual probe with a pointed conical container holding about a half pint on one end. This container is opened and closed by means of a control on the handle. The probe is inserted near each corner and the middle of the car and a sample taken from each of 3 levels at each of the 5 sampling points in what was described as an "envelope" pattern. The 15 portions thus obtained are composited and the composite sample is the official sample from the car. If any one of the 15 portions appears to be materially different from any other portion, the inspector is called to the car for a more detailed examination and further sampling. This is said to happen very rarely.

Barges are sampled in much the same way as cars. Each section of the barge is sampled in 5 places and all samples from the barge are normally composited.

When grain is loaded into a ship for export, sampling is done at the spout, usually by means of a mechanical sampling device. This device (not seen by the team since it was in an inaccessible location at the export elevator visited) is said to consist of a metal tube with many openings. This tube is mounted in a slightly tilted position with spaced openings, and oscillates continuously through the stream of grain. The grain entering the openings flows out of the lower end of the tube into a receptacle. This mechanical sampler collects about 100 grams of grain for each ton loaded. The sample is collected and graded (including the klyeikovina determination) once each hour during loading.

Inspection Analysis

Wheat samples drawn for inspection are analyzed in the following manner:

1. One kilogram of the sample is shaken mechanically on a 1.5-millimeter round-hole sieve. The material passing through the sieve is examined for live insects and returned to the bulk of the sample.
2. The entire inspection sample is mixed with a divider (Boerner type).
3. Test weight in terms of grams per liter is determined by weighing 1 liter of wheat measured in a metal cylinder.
4. A 50-gram and a 5-gram portion are obtained by means of the divider.
5. Moisture content is determined on the 5-gram portion by means of an electric meter similar to the Marconi meter. If the moisture is less than 12 percent it is determined by the oven method.
6. The 50-gram portion is sieved simultaneously with a 1.7 x 20 millimeter and a 0.5-millimeter round-hole sieve. The material through the 1.7 x 20 millimeter sieve is weighed and the percentage determined. This is recorded as a separate grading factor. The material through the 0.5-millimeter sieve is recorded as "mineral matter" (dirt, sand, etc.) on the work sheet and is part of the foreign material.
7. The material remaining on the 1.7 x 20 millimeter sieve is hand-picked for the various types of foreign material and "grain admixtures" defined in the standards. Handpicking is done on glass over a white background.
8. Vitreousness is determined on 100 kernels.
9. Klyeikovina is determined.
10. The sample is re-examined for damage by the insect Eurygaster.

"Klyeikovina".--Protein content of wheat, as such, is rarely determined in the Soviet Union, but the "klyeikovina" test is used in its place. The

klyeikovina test is a wet gluten test, but unlike the wet gluten test sometimes used in the United States and elsewhere, the determination is made on wheat (whole wheat meal) rather than flour. Wheat protein content is usually about 2.3 times the klyeikovina content, while flour protein content is usually about 3.0 times the wet gluten content.

Klyeikovina is determined as follows:

About 30 grams of wheat are ground with a small, high-speed grinder similar to the Moulinex mill. A 25-gram portion of the ground wheat is mixed with 14 millimeters of water with a pestle in a mortar to form a dough. The dough is rolled by hand into a ball which is allowed to stand for 15 minutes. The dough is then washed by hand in a pan of water or with a mechanical washing device until most of the bran and starch are removed and is then kneaded by hand until the excess water is removed. It is then weighed. Klyeikovina is then determined by the formula:

$$\text{Weight of final dough grams} \times 100 = \% \text{ klyeikovina}$$

The only reason given for the widespread use of the klyeikovina determination instead of the Kjeldahl protein determination is that it is simpler and more rapid and therefore practical of application in the inspection of wheat. Klyeikovina is determined on all wheat inspected and is shown as supplementary information on inspection certificates. The wisdom of using such a test for this purpose seems somewhat questionable because of the probable lack of precision in the test.

Gluten quality.--A unique, simple test is being used experimentally at the Institute to measure gluten quality. A 2.5-gram portion of wet gluten from the klyeikovina test is formed into a small ring which is suspended from a hook in a cylinder of water at 30° C. after attaching a 2-gram weight to the bottom of the ring. The rate of stretching of the dough is determined by measuring the length to which it has stretched in 1 hour or less. A rate of 0.4 millimeter per minute is considered normal for strong gluten. Weak gluten will stretch much more rapidly.

Vitreousness.--The factor "vitreousness" is used in the USSR wheat standards in a similar manner as the factors "dark, hard, and vitreous kernels" or "hard kernels" are used in the U.S. wheat standards. Vitreousness is expressed as the percentage of vitreous kernels, and a kernel judged to be "half vitreous" contributes half as much toward this percentage as a "vitreous" kernel. The determination is made by selecting 100 kernels at random and placing them in the small openings on a plastic disk about 3 inches in diameter. This disk is then placed over a light. The kernels that appear translucent are considered vitreous and those that are opaque are considered not vitreous. Most kernels fall clearly into one or the other of these classifications. Doubtful kernels are cut in two pieces crosswise and from the appearance of the cross sections are judged to be vitreous, not vitreous, or "half vitreous." This method is, on the average, more time consuming than the U.S. method, in which the determination is usually made at a glance.

Official Business

E R R A T A

"GRADING AND EXPORTING WHEAT IN THE UNION OF SOVIET SOCIALIST REPUBLIC"

(FAS M-99)

Please substitute the following for sentence which begins on line three of page 10, starting "Wheat protein content...."

Wheat protein content is usually about 0.43 times
the klyeikovina content, while flour protein content
is usually about 0.33 times the wet gluten content.

Dec. 23, 1960

Exporting Wheat

Wheat exported from the USSR is the responsibility of "Export Khleb" (State Export Grain Corporation). This Corporation is, in effect, an operating branch of the Ministry of Foreign Trade. Its job is to export the quantity of grain determined desirable or necessary by the State Planning Committee (GOSPLAN).

The Corporation's central office is located in Moscow, and representatives are stationed in the major ports of the country. Their job is to coordinate the internal movement of export grain with the State Committee for Grain Products, which controls all grain movements in the USSR, and to see that the grain is loaded aboard ships in accordance with contracts with foreign buyers.

Exports

Total wheat exports from the USSR have increased substantially in the past few years. In 1959, they were 6,018,000 metric tons compared to an average of 677,204 metric tons in 1934-38. It is interesting to note the wide fluctuation from one year to the next. There appears to be a direct relationship between production and exports — when production is high, exports are also high.

USSR exports outside of Soviet Bloc countries have increased from 385,300 metric tons in 1938 to 1,682,700 tons in 1959. The increased shipments outside have been upward except for 1957 when there was a poor crop in Bloc countries in 1956. On the other hand, exports to satellite countries have increased substantially but fluctuations have been larger.

Table 4.—Wheat: USSR exports to Soviet Bloc and Non-Bloc countries
average 1934-38, annual 1938 and 1955-59

Year	Soviet Bloc countries	Non-Bloc countries ^{1/}	Total
	<u>Metric tons</u>	<u>Metric tons</u>	<u>Metric tons</u>
Average: 1934-38	---	---	677,204
Annual:			
1938	---	---	1,275,870
1955	1,650,500	385,300	2,035,800
1956	547,600	904,800	1,452,400
1957	4,573,400	877,400	5,450,800
1958	2,836,500	1,042,200	3,878,700
1959	4,335,300	1,682,700	6,018,000

^{1/} Primarily Western Europe.

Official Soviet statistics.

Method of Sales to Western Europe

Overseas representatives of the Export Khleb are stationed in the major importing countries of Western Europe, which include the Netherlands, Belgium, Denmark, West Germany, and the United Kingdom. These representatives are attached to the Russian embassies, and are in fact a part of the trade section of the embassy. In countries where the "Export Khleb" does not have a representative, the trade section of the embassy represents this organization.

Wheat offered for sale in the foreign markets is sold by code number, which is the designation of the type, subtype, and class (class, subclass, and numerical grade in U.S. terminology) according to the USSR wheat standards. For example, the Code 431 which accounted for almost all of the exports to Western countries in 1959 refers to Type 4, Red Winter; subtype 3 light red winter - not less than 40% nor more than 59% vitreousness; and Class 1 with specified grain requirements.

Quality Specification

The "klyeikovina", essentially wet gluten, is determined for each shipment of wheat. This klyeikovina, an indication of the protein content of the wheat, is generally about 2.3 times as high as protein content determined by the Kjeldahl method. Information obtained indicated a statement of "klyeikovina" content is requested on about 30 percent of the wheat exported. All wheat exported carries a USSR State Grain inspection certificate printed in both Russian and English. (Copy of inspection certificate on page 13.)

Pricing

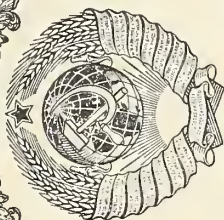
Prices are based on the London market and in the opinion of "Export Khleb" are usually slightly lower than prices of comparable quality wheat from the United States and Canada.

If the farms receive an average of 63 rubles per centner (\$4.29 per bushel) for their wheat and domestic mills as reported are charged an average of 83 rubles (\$5.65 per bushel), or 830 rubles (\$207.50) per metric ton, for the wheat they grind, it might be reasoned that wheat going into the export market is also worth at least 830 rubles or \$207.50 per ton.

Table 5.--Wheat: Assumed value of exports, compared with price received in 1959

Item	:	:	:
		Rubles	U.S. dollars ^{1/}
		Metric tons	Metric tons
Assumed value	:	830	207.50
Average price received, f.o.b. USSR ports ..	:	2/ 286	71.50
Difference	:	544	136.00

^{1/} Converted at rate of 4 rubles per dollar. ^{2/} USSR trade statistics, 1959.



ГОСУДАРСТВЕННАЯ ХЛЕБНАЯ ИНСПЕКЦИЯ—STATE GRAIN INSPECTION
СЕРТИФИКАТ—CERTIFICATE № 012591

Настоящим удостоверяется, что произведено инспек-
тирование при погрузке на пароход теплоход

в порту

следующего количества зерна, происходящего из СССР,
и что это зерно классифицировано как ниже указано:

Культура

Количество

Натурный вес

примесь

Зерно в зловом состоянии без постороннего запаха

Стандарт

кг., общая посторонняя

%, в т. ч. сорная

%.

19 г.

This is to certify that there has been inspected into
the vessel: s/s

loaded at the port

the following lot or parcel of grain, origin of the U.S.S.R.
and that the grade thereof is that stated below:

Kind

Quantity

Natural weight

matter, out of which foreign matter other than grain

The grain is in sound condition and free from foreign smell.

Grade

kgs per hectolitre. Foreign

Старший портовый хлебный инспектор—Chief port grain inspector

Инспектор—Inspector

Planned Utilization

The Soviet plan calls for a larger grain output. The objective is to increase livestock production as well as to provide for some expansion in exports of grain, primarily wheat.

Wheat for Food

The Russian people have been and continue to be heavy consumers of wheat and rye products. However, indications are that there has long been a downward trend in the per capita consumption of these products, particularly of rye bread. Dr. Volin ^{3/} reports that food budget surveys during the period 1925-27 showed per capita consumption of bread grains at about 550 pounds per year, of which about 40 percent was rye. In July 1960, Moscow government officials reported a per capita consumption of flour of 364 pounds, of which about 85 percent is wheat flour and 15 percent is rye flour. Using 78 percent as the extraction rate for wheat and 90 percent for rye, a per capita consumption of 397 pounds of wheat and 60 pounds of rye, or a total consumption of 457 pounds per capita per year, is derived. This would be a decrease of about 20 percent in per capita consumption of wheat and rye since 1925-27. The per capita decrease has in all probability been greater since it appears reasonable to assume that the urban population, which is now a much higher percentage of total population, is eating less groats, legumes, etc.

USSR officials also state that food plans for 1965 are based on flour consumption of 150 kilograms per capita per year, or about 361 pounds of wheat and 53 pounds of rye, using the same extraction rates and percentages of wheat and rye flour as above. Converting the above figures to total tons of wheat and rye consumption, using 209 million as the population in 1959 and 230 million for 1965, it appears that the increase in population will just about offset the decline in per capita consumption of wheat and rye. The planned total consumption for 1965 is 43.3 million metric tons, the same as in 1959.

Table 6.--Wheat and rye: Estimated consumption for food in USSR, 1959 and 1965

Year	Wheat	Rye	Total
	Million	Million	Million
	metric tons	metric tons	metric tons
1959	37.5	5.8	43.3
1965 (planned)	37.7	5.6	43.3

Wheat for Feed

There is a tremendous drive on in the USSR to increase the standards of living of the people. One of the stated objectives in this respect is to bring the consumption of livestock products and poultry up to the U.S. level.

^{3/} Lazar Volin, Survey of Soviet Russian Agriculture, p. 170, Foreign Agricultural Service, 1950.

Currently, per capita consumption of meat and poultry is about one-third that of the United States. The extent of the use of wheat for feed may depend largely on the success of the drive to increase livestock and poultry numbers coupled with "lack of" success in expanding feed grains production, particularly corn, to meet this additional feed requirement. There are indications that progress is being made in increasing livestock production, though, in the long run, lack of high protein feeds may be a serious limiting factor. In any event, the consensus seemed to be that considerable quantities of wheat might be used for feed by 1965.

Another factor favorable to the use of considerable wheat for feed is the high moisture content of much of the wheat, particularly that produced in the New Lands. Also, much of the wheat from that area generally is high in foreign material. In years when the weather is unfavorable at harvesttime in the New lands, it may be that the decision will be to feed much of the wheat if the demand for feed grains is strong and such wheat is high in moisture and foreign material.

Carryover or Stocks

Very little information was obtained on carryover or stocks. However, records obtained on collections and exports show that most of the increased collections during the past 4 years stayed in the country. It is believed that most of this additional wheat went to build up stocks rather than for immediate consumption. Even though exports continue at a fairly high level for the next few years, the buildup in stocks may be virtually completed by 1965.

Outlook, 1965

Use of Increased Output

If the level of wheat production in the USSR should reach 78 million tons by 1965 and the tonnage used for food within the Soviet Union should remain about the same as now, there would be 8 million or 10 million tons more of wheat annually to be disposed of internally, stored, or exported than was available in the period 1956-59. While Russian officials repeatedly stressed the point to the grain team that first priority would go to domestic use, it was obvious they were aware of the grain team's concern of competition in the export market. One order of priority was as follows:

1. Lower extraction rate (which is now about 78%)
2. Food for increased population
3. Feed for livestock and poultry
4. Planned increase in carryover or stocks
5. Export

Discussions with other officials indicated there is not much emphasis being placed on lowering the extraction rate as a means of improving the quality of the bread. Also, since lower per capita consumption may largely be cancelled by the increase in population, total consumption may remain about

steady. This leaves three possibilities for disposing of any increased production: (1) Feed for livestock and poultry, (2) the planned increase in stocks, and (3) exports.

Exports

Assuming that the level of wheat production in 1965 will be about the same as the record crop of 1958, then exports may also be at the 1959 (1958 crop) level or at least 6 million tons. This is based on indications that (1) total consumption for food will remain about the same as in 1959 and (2) the increased use of wheat for livestock and poultry feed will absorb wheat previously used to build up stocks. To the extent that the use of wheat for feed fails to offset wheat formerly used to build up stocks; additional quantities of wheat over and above 6 million tons may move into the export market.

The next and most vital question to the Free World exporters is how much of this wheat would be available for Free World markets. Southeastern European satellite countries seem destined to become self-sufficient in the near future, but East Germany and Czechoslovakia do not appear to be having such success. In fact, their import requirements may be increasing and, of so, total USSR wheat exports to the European satellites may remain fairly stable over the next 5 years. The USSR probably will also continue to export relatively small quantities of wheat to Communist China and other Communist-controlled areas of the world.

On balance it appears almost certain that the United States and other Free World exporters of wheat will meet increasing competition from the Soviet Union in world markets. This competition will be felt most keenly in Western Europe where the market is already shrinking, owing to increased production in the area, and to some extent in Japan. The level of competition is likely to be at least as high as 1959 and may be considerably higher. Although Soviet officials say that they want to export wheat on a commercial basis and in friendly competition with the West, the fact is that decisions on foreign trade are made on political as well as economic considerations. Under these circumstances, Free World exporters of wheat must be constantly alert to USSR attempts to move increasing quantities of wheat into world markets.

APPENDIX

Itinerary in the Soviet Union

- June 28. Arrived Moscow. Met with Dr. Wm. Horbaly, Agricultural Officer, Department of State, U.S. Embassy.
- June 29. Moscow. Met with State Scientific and Technical Committee and with State Committee of Grain Products.
- June 30. Moscow. Meetings with Grain Project Institute and Ministry of Agriculture. Night train to Leningrad.
- July 1. Leningrad. Visited No. 1 Confectionery Factory.
- July 2. Leningrad. Visited Kirov Milling Combine. Returned to Moscow by night train.
- July 3. Moscow to Kustenay, Kasakstan, Siberia, by plane.
- July 4. Kustenay. Visited Kustenay Elevator.
- July 5. Kustenay. Visited Aman-Karagai Elevator and Zalobolskiy Sovkhoz (state farm).
- July 6. Kustenay to Kiev via Sverdlovsk and Moscow, by plane.
- July 7. Kiev. Meeting with Ukrainian Ministry of Grain Products.
- July 8. Kiev to Odessa, by plane.
- July 9. Odessa. Visited Odessa Seaport Elevator and Odessa Milling Combine No. 2.
- July 10. Odessa. Visited Stalin Kalkhoz (collective farm) about 60 miles northwest of Odessa.
- July 11. Odessa. Visited Lysenko State Selection and Genetic Institute.
- July 12. Odessa to Novorosiik, by ship.
- July 13. Visited Novorosiik Seaport Elevator and flew to Krasnodar.
- July 14. Krasnodar. Met with Krasnodar Krai Committee for Grain Products and Krasnodar Agricultural Research Institute.
- July 15. Krasnodar. Visited Krasnodar Milling Combine and then Red Star Kalkhoz (collective farm) about 38 miles from Krasnodar.
- July 16. Krasnodar. Met again with Krasnodar Krai Committee for Grain Products. Krasnodar to Adler by plane, Adler to Sochi, by automobile.
- July 17
and 18. Sochi. Rest.
- July 19. Sochi to Moscow, by plane.
- July 20. Moscow. Visited State School for Flour Millers and Moscow Milling Combine No. 3.
- July 21. Moscow. Visited Tsyuryopi Milling Combine and Moscow Food Technological Institute.
- July 22. Moscow. Visited Agricultural Academy of Science.
- July 23. Moscow. Visited Moscow Milling Combine No. 4 and USSR Exhibition of Peoples' Economic Achievement.
- July 24.
(Sunday) Moscow. Visited Kremlin and attended Moscow Baptist Church.
- July 25. Moscow. Visited All-Union Scientific Research Institute of Grain and Grain Products.
- July 26. Moscow. Final meetings with State Committee for Grain and Grain Products and State Scientific and Technical Committee.

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